

DEPARTMENT OF MINES AND MINERAL RESOURCES

Often when we think of renewable energy and “green” technologies the need for minerals is overlooked. In fact, many green projects require more minerals than conventional uses. Thus, for example, a hybrid car takes almost twice as much copper as a regular automobile.

If minerals for renewable energy are mined and refined in the Arizona this would have an additive effect on the economy of the State and would imply more jobs. The average worker in the mining industry earns between \$60,000 and \$80,000 per year. The statewide average wage for workers in 2007 was \$41,223, according to the Bureau of Economic Analysis (Dec 2008), that is, 45 to 94% higher.

The Department of Mines and Mineral Resources (DMMR) could help companies locate these minerals within Arizona. The Department has a considerable amount of data that many companies use for this purpose. A few minerals needed for renewable energy generation are mentioned below:

Copper: Arizona produces nearly 2/3rd of the copper mined in the U.S., but the country imports almost 1/3rd of its consumption. Wind farms require 4 times the amount of copper than a traditional power plant, although estimates as high as 12 times have been quoted. Solar power needs 5 times as much of the metal as conventional facilities. A standard building is estimated to use 0.55 lb/sq ft of copper; “green” buildings use 0.72 to 1.23 lb/sq ft.

Tellurium, Cadmium, and Selenium are by-products of copper mining; these are all used in manufacturing photovoltaics.

Molybdenum and silver are both produced in the State, along with copper, and used in solar energy generation.

There are good deposits for arsenic, and indium exists in Mohave County. There are occurrences of gallium and germanium in the breccia pipes of Northern Arizona.

There are deposits of zinc in United Verde and in the Magma area. Sulfur is produced during the smelting of sulfide ore.

The construction of any type of power generation facility requires aggregate and cement; Arizona is large producer of both, and has good aggregate deposits that are yet untapped. One wind turbine tower may use up to 1,200 tons of concrete.

Arizona has the best deposits of uranium for the production of nuclear power, which also has no carbon footprint.

For further or specific information on the above or other minerals, please contact:

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